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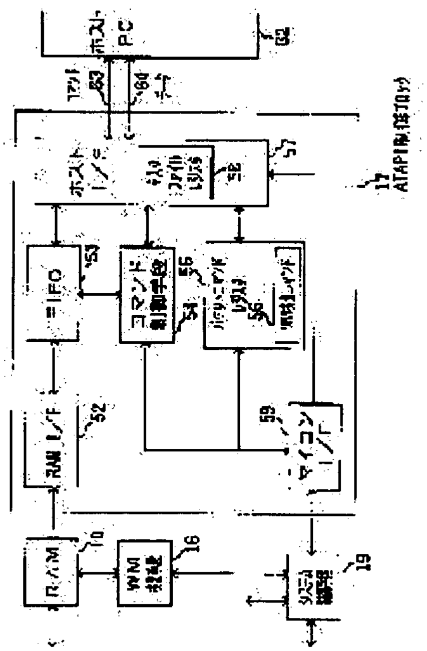
(54) DATA TRANSFER METHOD AND ITS DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To make the VM detected result easier to be reflected in reproducing a data, by receiving a data reproduction and VM detection as an independent command about such data as a copy-controlled information being added and transmitted to image and voice data as VM, by adding VM detection command in data transfer such as ATAPI.

SOLUTION: The device includes a reproduction-proceeding means applied to reproduction of the first data having the second data as an additional information, a detection means for detecting the second data and a switching means to make switching a reproduction by the reproduction processing means and detection by the detection means, and a control to control a speed to read the first data. For the detection period by the detecting means and the period applied to reproduction of the first data, the speed to read the first data is changed.

図 1



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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention is concerned with the transmission approach and equipment which embed and transmit another data (data hiding, watermark) to an image or voice data, and is concerned with a data transfer unit with the function to transmit the data embedded especially.
[0002]
[Description of the Prior Art] The digital-watermarking technique (data hiding) was studied until now as a technique which embeds identification information and a comment at an image or voice data. Recently, in order to protect copyright, identification information is embedded to data, and it is applied also as a technique for preventing unjust actuation. Since degradation arises by actuation of filtering, a data compression, etc., digital-watermarking data (following watermark: abbreviate to WM.) may be removed after conversion. Therefore, data are repeated, and it embeds, or it carries out, and data are made not to be removed. These techniques are indicated by Nikkei Business Publications "the Nikkei electronics" (1997. 2.24 P149-P162).
[0003]
[Problem(s) to be Solved by the Invention] the data of an original copy -- the copy from the relation of copyright -- a free thing, the thing of the prohibition on a copy, the thing that can be copied only once can consider various situations about a copy limit. According to those situations, it is with a digital-watermarking technique, data are embedded, and it considers controlling a copy by detecting it.
[0004] Since a limit of a copy changes with data, WM from which WM differs whenever the classes of each data differ is embedded. Therefore, it will be necessary to surely carry out WM detection to playback of data.
[0005] However, it is unstated to a Prior art about the actuation which detects WM. Moreover, by the conventional device, since such a new function is not supported, new control command is needed.
[0006]
[Means for Solving the Problem] In order to attain the above-mentioned object, to the transfer means for transmitting the 1st data, and said 1st data, this invention In equipment equipped with the detection equipment which the 2nd data which is the additional information of the 1st data may be contained, and said 2nd data is embedded to said 1st data, and detects said 2nd data A transfer means is equipped with a receiving means to receive the instruction which reads said 2nd data, and enables transmission and reception of a detection instruction of embedding data in the first half.
[0007]
[Embodiment of the Invention] Hereafter, the example of this invention is explained using a drawing.
[0008] Drawing 1 shows an example of an ATAPI block configuration which added WM detection command by this invention. 10 -- RAM and 52 -- a RAM interface and 53 -- FIFO and 54 -- for WM detection command and 57, as for a task file register and 59, a host interface and 58 are [a command control means and 55 / a packet command register and 56 / a signal for a host computer (for it to abbreviate to Host PC below) and 16 to deliver WM detection means, and for a system control means and 62 deliver / a microcomputer interface and 17 / a command in ATAPI control block and 19, as for 63 and 64] data buses. In this example, the data transmitted are once stored in RAM10, and show the configuration by which reading appearance is carried out through the ATAPI control block 17 to a host PC 62 from RAM10.
[0009] For example, it explains using the case where connect a CD-ROM drive etc. and Host PC reads data from CD. The data which played CD and regeneration finished are stored in RAM10. The data is transmitted to a host PC 62 through the ATAPI control block 17. Read specific data, Music CD is played, or a command, such as performing actuation which looks for data, is sent by the host PC 62 through the signal 63 for commands, and a system operates according to it. The host interface 57 receives the signal from a host PC 62, and a letter is answered in the signal corresponding to a command.

The command from a host PC 62 is judged with the packet command register 55, it is sent to the system control means 19, and a system is controlled according to it. According to the sent command, the command control means 54 controls FIFO53 and the host interface 57. Usually, the command which reads specific data is sent, according to it, through the RAM interface 52 from RAM10, reading appearance of the data is carried out and they are stored in FIFO53. If transfer ready [for a host PC 62], reading appearance will be carried out from FIFO53, and data will be sent to a host PC 62 through a data bus 63 through the host interface 57.

[0010] Temporarily, when the command from a host PC 62 is a command which detects WM, the WM command is judged with WM detection means 16, and the system control means 19 controls a system here according to it. for example, reading appearance of the data stored in RAM10 is carried out, and it is embedded to data by WM detection means 17 -- WM detection is carried out and the detection result is sent to the system control means 19. The system control means 19 returns WM detection result to a host PC 62 through the host interface 57 while controlling a system according to detected WM. By this, a host PC 62 can receive WM detection result as an answer which sent WM detection command. The case where it is the information on copy control temporarily about the class of WM currently embedded here is considered. Of course, the information embedded is not restricted to copy control information, is the information showing the class of data, the control information according to each record medium, etc., and is not limited. In order to reproduce data, copy control may be required because of protection of copyright. Data have some which are recorded as media like the thing, disk, and cassette which are sent through radio like broadcast. Therefore, it is necessary to detect copy control information according to each gestalt, and to perform playback control or record control according to it. Therefore, the system control means 19 stops the data transfer from the ATAPI control block 17 according to detected WM.

[0011] Drawing 2 shows an example of the ATAPI packet command of CD-ROM which added WM detection command by this invention.

[0012] No.1-24 are the conventional ATAPI packet command, and No.25 had become "RESERVED FOR FUTURE USE (BFh)." By newly assigning this No.25 command as a "WM detection" command, the ATAPI function to the former can be used as it is, and enables WM detection. Or this operation code: If it is the operation code which has not carried out a current activity even if it is not BFh, wherever it may use, it will not matter.

[0013] Drawing 3 and drawing 4 show an example of the packet of the ATAPI command of WM detection function by this invention. Drawing 3 specifies the address which shows the head of the data which detect WM by Logical Brock Address (logical block address), and shows an example of the approach of beginning detection from the block. Whichever, such as an approach of specifying the part of the field which starts / ends detection, a second, and a frame, are sufficient as drawing 4 .

[0014] Although the example at the time of adding WM detection command to ATAPI was shown in this example so far, if it is the fur mat which performs not only ATAPI but data transfer, there is no definition, such as SCSI (Small Computer System Interface), and IEEE1394, USB (Universal Sirial Bus), and it should just add the command added to each free area.

[0015] Moreover, drawing 5 shows one example with WM detection function by this invention of the playback structure of a system. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0016] the disk whose 10 is RAM and whose 11 is a record medium in drawing 5 , and 12 -- for a signal-processing block and 15, as for WM detection means, the motor to which in ATAPI control block and 18 a system control means and 20 turn a roll control means, and, as for 21, a signal output terminal and 19 turn [17] a disk, and 22, a regenerative-signal processing means and 16 are [pickup and 13 / pre amplifier and 14 / a display means and 24] authentication means.

[0017] The signal reproduced by pickup 12 from the disk 11 is amplified by pre amplifier 13, and is inputted into the signal-processing block 14. If it roughly divides, the signal-processing block 14 will not be illustrated for details, although a regenerative-signal processing means 15 to regenerate according to the format which is having the regenerative signal recorded, and the processing which usually performs rearrangement and the error correction of data into this are included. According to RAM10 which stores data temporarily, WM detection stage 17 which detects WM contained in the reproduced signal, and detected WM, system control 19 controls the output to the output signal terminal 18. It will stop outputting data, if WM shows being copied illegally. Moreover, if it is the information which shows granting a permission only when WM is playback, and not permitting that the data is recorded, in the case of a monitor, a display, and a sound signal, the output to a loudspeaker will be performed at the case of playback output equipment, i.e., a video signal, but it controls making it not output to a record device, i.e., a tape recorder or a disk recorder, and a hard disk etc. by the approach suitable for the copy information.

[0018] In the ATAPI control block 17, the signal outputted is outputted according to the transmittal mode of ATAPI. The display means 22 receives the control signal from a system control means, and displays the condition at that time, and the information included in the recorded signal. The authentication means 24 is an authentication means for attesting on a connection partner and both sides, when connecting with other devices as this whole system. It can check by this what kind of device a connection partner is, and system control is performed according to the authentication result, and if needed, the code by scramble is applied so that the data under transfer cannot be sampled from the middle. Although the authentication means 24 was described for containing in the signal-processing block 14 in this drawing, it is also possible not to be actually restricted to such connection, to carry out direct continuation to the system control means 19, or to make it contained in the ATAPI control block 17. Moreover, although described as an example which performs an exchange of the signal for authentication through the ATAPI control block 17, it is not limited to this but the exchange with a direct authentication place may be performed from an authentication means.

[0019] From the regenerative-signal processing means 15, the roll control means 20 controls reception and a motor for the rate detecting signal which can detect rotational speed, and controls a revolution of a disk to the revolution of a target. The system control means 19 sets the roll control of a target as the roll control means 20.

[0020] The regenerative-signal processing block 14 may output data after performing expanding processing, when the data further recorded as the case where data after performing a recovery and an error correction by considering the regenerative signal from a disk as an input are outputted are image data compressed by MPEG.

[0021] Temporarily, when the read-out command from the connection place of the output signal terminal 18 is a command which detects WM, the WM command is judged by the ATAPI control block 17, and the system control means 19 controls a system here according to it. for example, reading appearance of the data stored in RAM10 is carried out, and it is embedded to data by WM detection means 17 -- WM detection is carried out and the detection result is sent to the system control means 19. The system control means 19 returns WM detection result to the connection place of the output signal terminal 18 through the ATAPI control block 17 while controlling a system according to detected WM. By this, the connection place of the output signal terminal 18 can receive WM detection result as an answer which sent WM detection command. Furthermore, the command which attests between the devices linked to a data bus is also added collectively. A regeneration system with WM detection function by the ATAPI command can be constituted from considering as such a configuration, and it becomes possible to carry out copy control correctly.

[0022] Drawing 6 shows one example with WM embedding function by this invention of the record structure of a system. The thing of the same number as drawing 5 shows the same thing.

[0023] The signal inputted from the signal input terminal 30 is inputted into the record signal-processing block 31. The record signal-processing blocks 31 are WM detection / embedding means 23 for newly writing in, when WM contained in a record signal-processing means 32 to perform record signal processing according to the format which records a signal input if it roughly divides, RAM10 which stores data temporarily, and the signal to record is updated or WM is not written in yet. According to WM embedded command received by the ATAPI control block 17, system control 19 is controlled to embed WM so much from the input signal terminal 18 at input data. Furthermore, the command which attests between the devices linked to a data bus is also added collectively. Here, although it is not illustrating in updating WM, WM detection of the data inputted first is performed and it updates according to it. When detected WM is prohibition on record more than this, it is made not to carry out record processing. Moreover, if WM shows that it is what it is going to copy illegally, it will stop recording data. If it is the information which shows WM permitting only playback and not permitting that the data is recorded, in the case of a monitor, a display, and a sound signal, the output to a loudspeaker will be performed at the case of playback output equipment, i.e., a video signal, but it controls making it not output to the output from a record device, i.e., a tape recorder or a disk recorder, and a hard disk etc. by the approach suitable for the copy information. Here, the output from the ATAPI control block 17 is stopped, and it can be made not to carry out record processing. The system control means 19 returns WM detection result to the connection place of the input signal terminal 18 through the ATAPI control block 17 while controlling a system according to detected WM. By this, the connection place of the input signal terminal 18 can receive WM detection result as an answer which sent the renewal command of WM.

[0024] From the record signal-processing means 31, the roll control means 20 controls reception and a motor for the rate detecting signal which can detect rotational speed, and controls a revolution of a disk to the revolution of a target. The system control means 19 sets the roll control of a target as the roll control means 20.

[0025] A record system with WM embedding function by the ATAPI command can be constituted from considering as such a configuration, and it becomes possible to carry out copy control correctly.

[0026] Drawing 7 shows an example of the actuation with WM continuation detection function by this invention of a regeneration system. Data can be added as some files and, in the case of the disk which can be written in, copy control information may differ about each file. Therefore, when the head of a file is usually newly detected, according to it, it is necessary to perform ******** WM detection actuation. However, if WM detection is performed for every file, it may break off for WM detection of the continuous file playback. therefore, the copy which followed WM for every file when WM detection of each file was performed previously -- it becomes controllable.

[0027] As shown in drawing 7 , when a disk is newly inserted, or in starting continuation playback, it judges whether it is necessary to detect continuously WM of the data currently written to the disk, and to perform copy control for every file. Copy control information carries out playback control according to each WM detection result, when it detects previously, it stores in memory whether what we should do with copy control for every file and each file is reproduced. WM continuation detection command can be temporarily prepared using the field which is not used as an additional function of an example shown in drawing 2 .

[0028] When a new disk is inserted, first, TOC (Table Of Contents) is read and the information about the disk is acquired. For example, there is a file how many and which file once stores in memory from which address it starts. The address of the file which reads TOC information from memory to a carrier beam case, and reproduces WM continuation playback command as an ATAPI command is got to know temporarily, and WM is detected from there. If WM of a file N0.1 is detected first, the result will be returned to the generating origin of a system control means or the WM command, i.e., the data transfer point. Next, in order to detect WM of the ** file N0.2, the address of file No.2 is got to know from TOC information, pickup is moved there, and WM detection is performed. By repeating this actuation, WM added to n files is read continuously, the information about copy control of those files is acquired, and it sends to system control or the data transfer point.

[0029] temporarily, when it is prohibition of playback in the case where it is data copied illegally etc. as a result of carrying out reading appearance of the WM of the file of No.2 for example, a system control means stops playback of file No.2, and it controls to reproduce the following file No.3. Thus, it not only reads WM for every file each time, but it is easily realizable to also receive WM continuation playback command. It becomes possible to perform the playback data transfer according to copy control continuously by having such a command, without breaking off for WM detection.

[0030] Moreover, drawing 8 shows one another example with WM detection function by this invention of the playback structure of a system. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0031] In drawing 8 , 101 is an image expanding means.

[0032] This system shows the example when an MPEG decoder is carried in the conventional CD or the configuration of a DVD drive. When it was a thing to the former, the data reproduced by CD or DVD drive were transmitted to the MPEG decoder board, and image data was reproduced. At this time, Host PC will have to perform start/stop of transfer data, and address administration for continuation playback, and a burden will be placed on a host. In this example, by transmitting assignment of an image data playback command and a start address, the regenerative-signal processing means 15 performs data playback of CD or DVD, and image reconstruction by the image expanding means 101 is performed after that with the system control means 19 from a host. WM detection is performed to it and coincidence and it is made to perform control according to the detection result. The system control means 19 returns WM detection result to the connection place of the output signal terminal 18 through the ATAPI control block 17 while controlling a system according to detected WM. In this drawing, although WM detection showed the example by the input from the image expanding means 101, especially definition does not carry out the input from the regenerative-signal processing means 15 or RAM10 etc.

[0033] Processing of a host is simplified because can carry out copy control of the regeneration system which has WM detection function by the addition of the ATAPI command correctly and system control processes by considering as such a configuration.

[0034] Drawing 9 shows one another example with WM embedding function by this invention of the record structure of a system. The thing of the same number as drawing 6 shows the same thing. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0035] In drawing 9 , 111 is a picture compression means.

[0036] This system shows the example when an MPEG encoder is carried in the configuration of a drive of CD or DVD in which the conventional record is possible. When it was a thing to the former, after inputting into the MPEG encoder board the data by which the ATAPI transfer was carried out and carrying out MPEG compression, record processing was carried out by CD or DVD drive, and image data was recorded. At this time, Host PC will have to perform the start/stop and record address administration of transfer data, and a burden will take for a host. From a host, by transmitting an image data-logging command, picture compression by the picture compression means 111 is performed, and record processing of the data of CD or DVD is performed with the record signal-processing means 32 after that with the system control means 19 at this example. WM detection is performed to it and coincidence and it is made to perform record control according to the detection result. The system control means 19 returns WM detection result to the connection place of the signal input terminal 50 through the ATAPI control block 17 while controlling a system according to detected WM. In this drawing, although WM detection showed the example by the input from the picture compression means 111, especially definition does not carry out the input from the record signal-processing means 32 or RAM10 etc.

[0037] Processing of a host is simplified because can carry out copy control of the regeneration system which has WM embedding function by the addition of the ATAPI command correctly and system control processes by considering as such a configuration.

[0038] Moreover, drawing 10 shows one another example with WM detection function by this invention of the playback structure of a system. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0039] As for a voice expanding means and 122, in drawing 10 , 121 is [a D/A converter and 123] voice output terminals.

[0040] This system shows the example when the decoder for voice is carried in the conventional CD or the configuration of a DVD drive. As for the method of speech compression, MPEG, MP-3, etc. do not carry out especially definition. When it was a thing to the former, the data reproduced by CD or DVD drive were transmitted to the voice decoder board, and it considered as voice data, and by the D/A converter, it changed into the analog data and voice data was reproduced. At this time, Host PC will have to perform start/stop of transfer data, and address administration for continuation playback, and a burden will take for a host. In this example, by transmitting assignment of a voice data playback command and a start address, the regenerative-signal processing means 15 performs data playback of CD or DVD, and image reconstruction by the image expanding means 101 is performed after that with the system control means 19 from a host. WM detection is performed to it and coincidence and it is made to perform control according to the detection result.

[0041] The system control means 19 returns WM detection result to the connection place of the output signal terminal 18 through the ATAPI control block 17 while controlling a system according to detected WM. Although the "PLAY AUDIO" command exists also in a current ATAPI packet command, WM is not detected together. In this drawing, although WM detection showed the example by the input from the voice expanding means 131, especially definition does not carry out the input from the regenerative-signal processing means 15 or RAM10 etc.

[0042] Processing of a host is simplified because can carry out copy control of the regeneration system which has WM detection function by the addition of the ATAPI command correctly and system control processes by considering as such a configuration.

[0043] Drawing 11 shows one another example with WM embedding function by this invention of the record structure of a system. The thing of the same number as drawing 9 shows the same thing. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0044] In drawing 11 , 131 is a speech compression means and 132 is an A/D converter.

[0045] This system shows the example when the encoder for voice is carried in the configuration of a drive of CD or DVD in which the conventional record is possible. As for the method of speech compression, MPEG, MP-3, etc. do not carry out especially definition. When it was a thing to the former, after inputting and compressing into a voice encoder board the data by which the ATAPI transfer was carried out, record processing was carried out by CD or DVD drive, and voice data was recorded. At this time, Host PC will have to perform the start/stop and record address administration of transfer data, and a burden will take for a host. From a host, by transmitting a voice data record command, speech compression by the speech compression means 131 is performed, and record processing of the data of CD or DVD is performed with the record signal-processing means 32 after that with the system control means 19 at this example. WM detection is performed to it and coincidence and it is made to perform record control according to the detection result. The system control means 19 returns WM detection result to the connection place of the signal input terminal 50 through the ATAPI control block 17 while controlling a system according to detected WM. In this drawing, although WM detection showed the example by the input from the picture compression means 111, especially definition does not carry out the input from the record signal-processing means 32 or RAM10 etc. Moreover, the case where the data digitized by the A/D converter through the voice input terminal 122 from the input of a microphone etc. also about the input of voice data as illustrated are encoded, and the case where read the data stored in RAM10 through the ATAPI control block 17, and speech compression processing is carried out can be considered.

[0046] Processing of a host is simplified because can carry out copy control of the regeneration system which has WM embedding function by the addition of the ATAPI command correctly and system control processes by considering as such a configuration.

[0047] Moreover, drawing 12 shows one another example with WM detection function by this invention of the satellite broadcasting service receiving structure of a system. Although the example of a disk regenerative apparatus is used here for explanation, of course, this is not the object limited to a disk regenerative apparatus, and is concerned with a data-logging regenerative apparatus at large [containing a magnetic recorder and reproducing device etc.].

[0048] For a tuner and 143, as for a decode means and 145, in drawing 12 , a channel selection means and 144 are [141 / an antenna and 142 / an image expanding means and 146] IEEE1394 control block.

[0049] This system shows the example when decoders, such as MPEG, are carried in the configuration of the conventional satellite broadcasting service receiving system (STB: called a set top box.). When it was a thing to the former, the data reproduced by STB were transmitted to the MPEG decoder board, and image data was reproduced. At this time, the timing of the signal sent by the electric wave and the processing timing in a decoder board needed to be doubled, and control of data delivery was complicated on both sides. In this example, if channel is chosen to direct STB through IEEE1394 and an image output command is inputted, the received data will be decoded with the decode means 144, data decompression will be carried out with the image expanding means 145, and it will output through the IEEE1394 control block 146. WM detection is performed to it and coincidence and it is made to perform control according to the detection result. The system control means 19 returns WM detection result to the connection place of the output signal terminal 18 through the IEEE1394 control block 146 while controlling a system according to detected WM. In this drawing, although WM detection showed the example by the input from the image expanding means 141, especially definition does not carry out the input from the decode means 144 or RAM10 etc. An output destination change is a display or has cases, such as an archive medium which records image data.

[0050] Copy control of the regeneration system which has WM detection function automatically by considering as such a configuration according to an IEEE1394 command can be carried out correctly.

[0051] Drawing 13 shows the case where some devices are connected to the system equipped with two or more devices, for example, a personal computer. In a personal computer, since inclusion of each device can be changed easily, the combination of all the devices that deliver data through the bus for the data transfer instead of what is limited to the combination shown in this example is included.

[0052] Moreover, as shown in this example, each device is not limited to what is included in a personal computer, but is aimed at all the things that connect the MO drive of external connection, a monitor, a digital camera, etc. to a personal computer, and deliver data. Furthermore, the data bus which delivers data, and the PCI bus inside a personal computer, connection with the exterior and the data bus of formats, such as possible ATAPI, a SCSI interface, USB, and IEEE1394, consider as an object.

[0053] For an MO drive and 153, as for a scanner, the mother board in which in 155 a monitor and 158 carried the sound board and, as for the hard disk 156, an MPEG board and 157 carried CPU, as for 159, and 160, a digital camera and 154 are [151 of this drawing / a DVD drive and 152 / a video board and 161] loudspeakers.

[0054] In a personal computer, delivery of data is performed between each device through some data buses. For example, connection of a hard disk 156 is connected by IDE (Intelligent Drive Electronics), CD, or the DVD drive 151 by infrared ray communication like [the PCI bus as a local bus inside PC, and connection with a peripheral device] IrDA, such as the parallel port and SCSI of RS-232C, USB, and IEEE1394, etc., using SCSI and ATAPI in many cases. In order to prevent that the data on a data bus are copied unjustly, a command is added to the command of each transmittal mode so that WM detection may be performed for data, playback and when recording and displaying. Furthermore, the command which attests between the devices linked to a data bus is also added collectively.

[0055] Here, when authentication is not materialized, it stops that the device judges that it is the device which is not equipped with the function to perform copy control correctly, and outputs data. Moreover, it is also possible to output only in the case of the device which a storage device is not connected to a data bus, but has a regenerative function by only playback accepting by WM detection result in being ************ data. Moreover, data may enable it to deliver data through a data bus top only within a thing without a copy limit.

[0056] It is also possible that these WM detection also performs WM detector in preparation for each device and to perform WM detection with the software for controlling each device, when like [a personal computer etc.] although it is possible. Moreover, it is also possible to perform WM detection on OS which controls each device in generalization, and to control each device according to the detection result.

[0057] Thus, in the usual I/O and usual transfer between each device linked to a data bus, the command which performs

WM detection was added and it made it possible to perform copy control correctly by controlling delivery of data according to WM detection result.

[0058] Drawing 14 shows the case where some devices are connected as the system equipped with two or more devices, for example, a home network system. In a home network system, since combination can be changed easily, the combination of all the devices that deliver data through the domestic bus for the data transfer instead of what is limited to the combination shown in this example is included.

[0059] As for the bus of the home network system which delivers data, the data bus of formats, such as possible ATAPI, a SCSI interface, USB, and IEEE1394, also makes an object not only connection like LAN but connection with PC device.

[0060] 160 of this drawing -- the domestic bus of a home network system, and 161 -- a telephone and 162 -- for STB and 165, as for VTR and 167, TV (the 2nd set) and 166 are [TV (the 1st set) and 163 / a DVD player and 164 / an audio and 168] PCs.

[0061] It is the system mainly connected with a home network system to the exterior and each home through LAN, the telephone line, ISDN, etc. As for these, delivery of data is performed between each device through the domestic bus 160. By the device treating the data which have copyright then, in order to prevent being unjustly copied on a data bus, a command is added so that WM detection may be performed for data, playback and when recording and displaying.

[0062] Furthermore, the command which attests between the devices linked to a data bus is also added collectively.

[0063] Thus, in the usual I/O and usual transfer between each device linked to a data bus, the command which performs WM detection was added and it made it possible to perform copy control correctly by controlling delivery of data according to WM detection result.

[0064]

[Effect of the Invention] When the command which detects WM which is data which put another additional information, such as prohibition on a copy, on an image or voice data as a command of data transfer is added according to this invention, while controlling a system according to detected WM, WM detection result is returned to the connection place of an output signal terminal through ATAPI control block. By this, the connection place of an output signal terminal can receive WM detection result as an answer which sent WM detection command. A regeneration system with WM detection function by the ATAPI command can be constituted from considering as such a configuration, and it becomes possible to carry out copy control correctly.

[0065] Moreover, it becomes possible by adding WM embedded command by the ATAPI command to carry out copy control correctly also at the time of record.

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] To the transfer means for transmitting the 1st data, and said 1st data In the data transfer unit equipped with a detection means for the 2nd data which is the additional information of the 1st data to be contained, and for said 2nd data to be embedded to said 1st data, and to detect said 2nd data Said transfer means is a data transfer unit characterized by having a receiving means to receive the instruction which reads said 2nd data.
[Claim 2] In the data transfer unit according to claim 1, information for said 2nd data to control a copy is included. A copy limit does not have the 2nd detected data, or the data transfer from said transfer means is controlled according to the information which shows [the prohibition on a copy, and] whether only time cost can be copied. The data transfer unit characterized by transmitting the flag which shows it when data transfer is stopped according to said 2nd data.
[Claim 3] The data transfer unit characterized by displaying the condition on a display means when it has the display means which shows the condition of a transfer in a data transfer unit according to claim 1 or 2 and data transfer is stopped according to said 2nd data.
[Claim 4] It is the data transfer approach which is an approach of transmitting the 1st data and is characterized by adding the instruction for the 2nd data which is the additional information of the 1st data being contained in said 1st data, and said 2nd data being embedded to said 1st data, and detecting said 2nd data.
[Claim 5] The data transfer approach characterized by transmitting the detection result of said 2nd data and controlling said 1st data transfer according to the detection result of said 2nd data when the instruction for detecting said 2nd data is received in the data transfer approach according to claim 4.
[Claim 6] The data transfer approach characterized by receiving the detection result of said 2nd data and controlling said 1st data transfer according to the detection result of said 2nd data when the instruction for detecting said 2nd data is sent in the data transfer approach according to claim 4.
[Claim 7] The data transfer approach characterized by performing authentication with said destination as for which the 1st carries out a data transfer, and controlling said 1st data transfer according to the result of authentication with the destination before starting said 1st data transfer, when the instruction for detecting said 2nd data is received in the data transfer approach according to claim 4.
[Claim 8] It is the approach of transmitting the 1st data. To said 1st data The 2nd data which is the additional information of the 1st data may be contained. Said 2nd data is embedded to said 1st data, and the instruction for performing authentication with the destination to which said 1st data is transmitted is added. The data transfer approach characterized by detecting said 2nd data when an instruction of authentication is received, and controlling said 1st data transfer according to the detection result of said 2nd data.
[Claim 9] It is the data transfer unit characterized by having a receiving means to receive the instruction with which said transfer means embeds said 2nd data in the data transfer unit equipped with the transfer means for transmitting the 1st data, and the embedding means which embeds the 2nd data which is the additional information of the 1st data to said 1st data.
[Claim 10] It is the data transfer approach which is an approach of transmitting the 1st data and is characterized by adding the instruction for the 2nd data which is the additional information of the 1st data being contained in said 1st data, being able to embed said 2nd data to said 1st data, and embedding said 2nd data.
[Claim 11] It is the data-transfer approach characterized by to add the instruction which the 2nd data which is the additional information of the 1st data may be contained, said 2nd data is embedded to said 1st data, and said 1st data consists of multiple files in the transfer approach of transmitting said 1st data, and carries out continuation detection of said 2nd data for every file to the 1st data.
[Claim 12] A regeneration means for the 1st data which is the information on an image or voice, and the 2nd data which is the additional information of said 1st data to be embedded to said 1st data, and to regenerate said 1st data, A detection

means to detect said 2nd data embedded to said 1st data, The switch means which changes detection by said detection means to playback by said regeneration means, The period which is equipped with the control means which controls the rate which reads said 1st data, and detects with said detection means The period which controls the rate which reads data and regenerates said 1st data so that it may consider as the rate which can detect the rate which reads said 1st data The data transfer approach characterized by making it change so that the rate which reads data may be controlled to consider as the rate which can regenerate the rate which reads said 1st data.

[Translation done.]

* NOTICES *

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing one example of an adding-WM detection command by this invention ATAPI block configuration.
[Drawing 2] It is drawing showing an example of the ATAPI packet command of CD-ROM which added WM detection command by this invention.
[Drawing 3] It is drawing showing an example of the packet of the ATAPI command of WM detection function by this invention.
[Drawing 4] It is drawing showing an example of the packet of the ATAPI command of WM detection function by this invention.
[Drawing 5] It is drawing showing one example with WM detection function by this invention of the playback structure of a system.
[Drawing 6] It is drawing showing one example with WM detection function by this invention of the record structure of a system.
[Drawing 7] It is drawing showing an example of the actuation with WM continuation detection function by this invention of a regeneration system.
[Drawing 8] It is drawing showing one another example with WM detection function by this invention of the playback structure of a system.
[Drawing 9] It is drawing showing one another example with WM embedding function by this invention of the record structure of a system.
[Drawing 10] It is drawing showing one another example with WM detection function by this invention of the playback structure of a system.
[Drawing 11] It is drawing showing one another example with WM embedding function by this invention of the record structure of a system.
[Drawing 12] It is drawing showing one another example with WM detection function by this invention of the satellite broadcasting service receiving structure of a system.
[Drawing 13] It is drawing showing the case where some devices are connected to the system equipped with two or more devices twisted to this invention, for example, a personal computer.
[Drawing 14] It is drawing showing the case where some devices are connected as the system equipped with two or more devices twisted to this invention, for example, a home network system.
[Description of Notations]
10 [-- A command control means 55 / -- A packet command register, 56 / -- WM detection command, 57 / -- A host interface, 58 / -- A task file register, 59 / -- A microcomputer interface, 17 / -- ATAPI control block, 19 / -- A system control means, 62 / -- A host computer, 16 / -- WM detection means, 63 / -- The signal for delivering a command, 64 / -- Data bus.] -- RAM, 52 -- A RAM interface, 53 -- FIFO, 54

[Translation done.]

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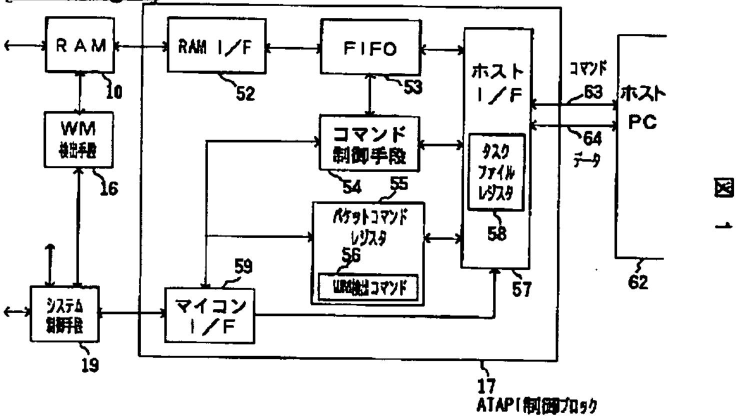
DRAWINGS

[Drawing 1]


RAM
10
RAM I/F
52
FIFO
53
ホスト
I/F
コマンド
63
ホスト
PC
64
データ
WM
検出手段
16
コマンド
制御手段
54
55
タスク
ファイル
レジスタ
58
パケットコマンド
レジスタ
56
WM検出コマンド
59
57
62
システム
制御手段
19
マイコン
I/F
17
ATAPI制御ブロック
図 1

[Drawing 3]

Byte\Bit	7	6	5	4	3	2	1	0
0	Operation Code							
1	Reserved							
2	Starting Logical Brock Address(3)							
3	Starting Logical Brock Address(2)							
4	Starting Logical Brock Address(1)							
5	Starting Logical Brock Address(0)							
6	Reserved							
7	Detection Length(1)							
8	Detection Length(0)							
9	Reserved							
10	Reserved							
11	Reserved							

図 3

[Drawing 2]

図 2

No.	コマンド	オペコード	
1	INQUIRY	12h	
2	LOAD/UNLOAD STATUS	A6h	
3	MECHANISM STATUS	BDh	
4	MODE SELECT(10)	55h	
5	MODE SENCE(10)	5Ah	
6	PAUSE/RESUME	4Bh	
7	PLAY AUDIO(10)	45h	
8	PLAY AUDIO MSF	47h	
9	PLAY CD	BCh	
10	PREVENT/ALLOW MEDIUM REMOVAL	1Eh	
11	READ(10)	28h	
12	READ(12)	A8h	
13	READ CD	BEh	
14	READ CD MSF	B9h	
15	READ HEADER	44h	
16	READ SUB-CHANNNEL	42h	
17	READ TOC	43h	
18	REQUEST SENCE	03h	
19	SCAN	BAh	
20	SEEK	2Bh	
21	SET CD SPEED	BBh	
22	STOP PLAY/SCAN	4Eh	
23	START STOP UNIT	1Bh	
24	TEST UNIT READY	00h	
25	RESERVED FOR FUTURE USE	BFh	

[Drawing 4]

Byte\Bit	7	6	5	4	3	2	1	0
0	Operation Code							
1	Reserved							
2	Reserved							
3	Starting M Field							
4	Starting S Field							
5	Starting F Field							
6	Ending M Field							
7	Ending S Field							
8	Ending F Field							
9	Reserved							
10	Reserved							
11	Reserved							

図 4

[Drawing 5]

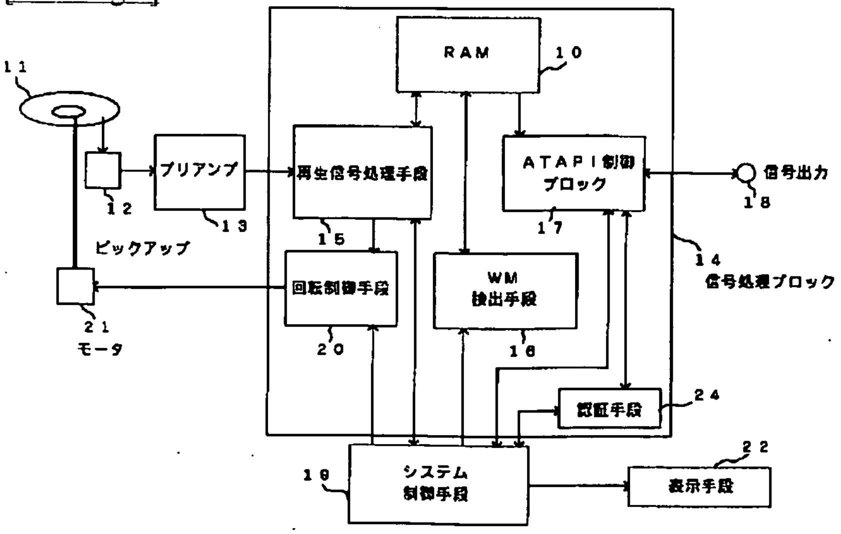

RAM
10
11
12
プリアンプ
13
再生信号処理手段
15
ATAPI制御ブロック
17
信号出力
18
ピックアップ
14
信号処理ブロック
回転制御手段
20
WM 検出手段
16
21
モータ
24
認証手段
19
システム制御手段
22
表示手段

図 5

[Drawing 6]

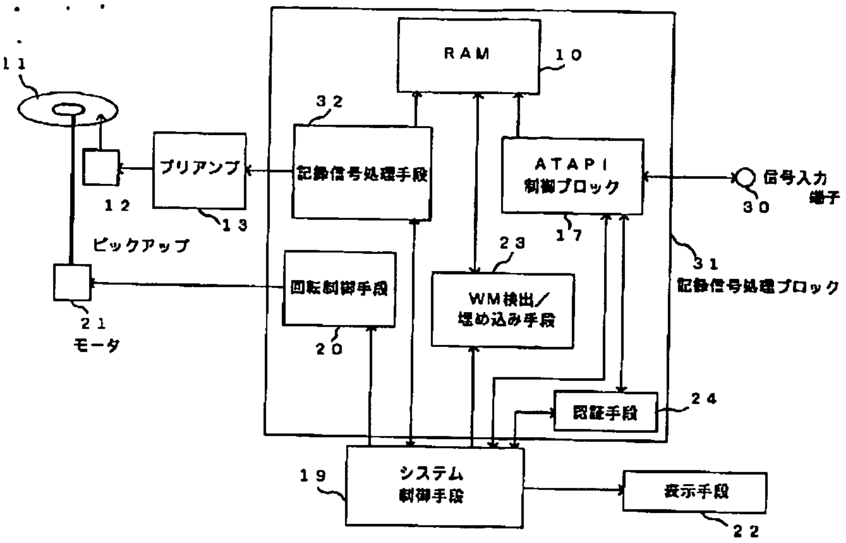

RAM
10
32
記録信号処理手段
ATAPI
制御ブロック
信号入力
端子
30
17
11
12
プリアンプ
13
ピックアップ
21
モータ
回転制御手段
20
23
WM検出／
埋め込み手段
31
記録信号処理ブロック
認証手段
24
19
システム
制御手段
表示手段
22

図 6

[Drawing 7]

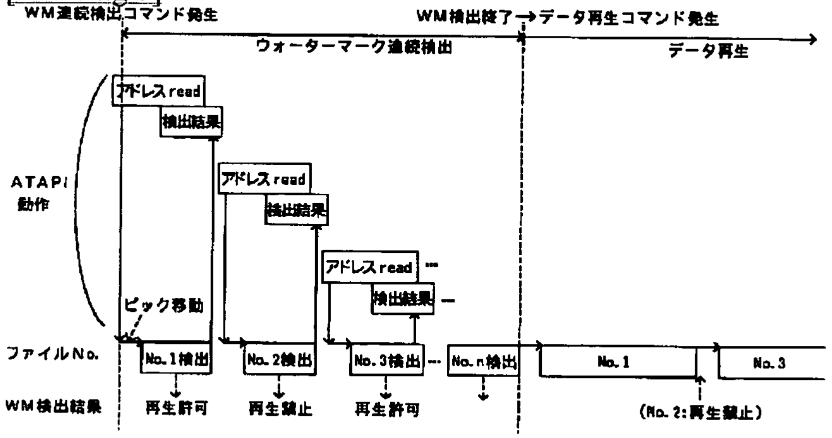

WM連続検出コマンド発生
WM検出終了→データ再生コマンド発生
ウォーターマーク連続検出
データ再生
アドレスread
検出結果
ATAPI
動作
アドレスread
検出結果
アドレスread
検出結果
ピック移動
ファイルNo.
No.1検出
No.2検出
No.3検出
No.n検出
No.1
No.3
WM検出結果
再生許可
再生禁止
再生許可
(No.2:再生禁止)

図 7

[Drawing 8]

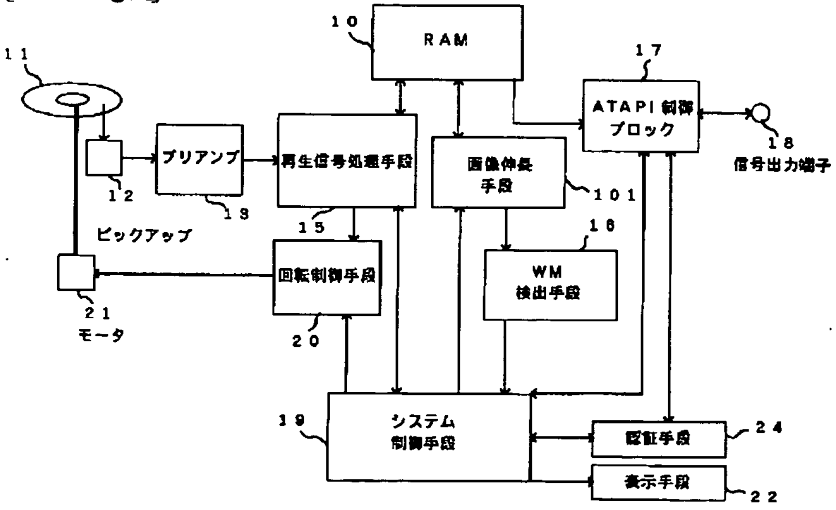
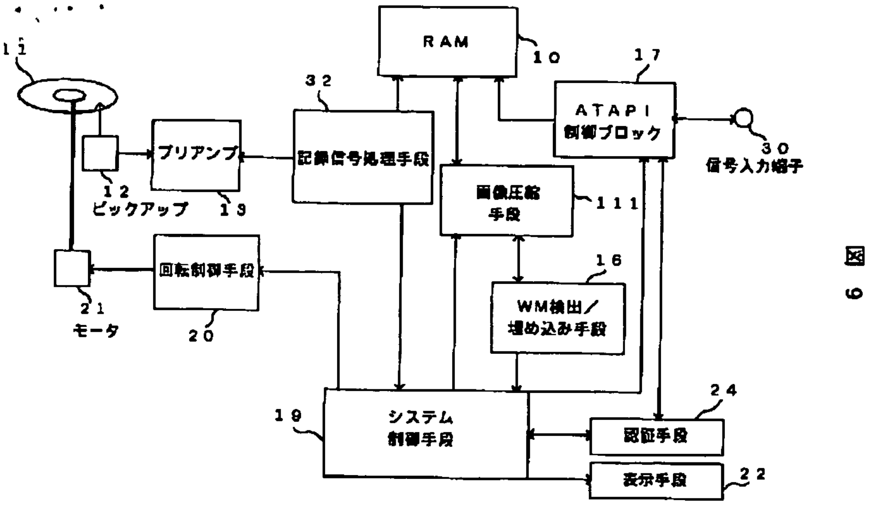
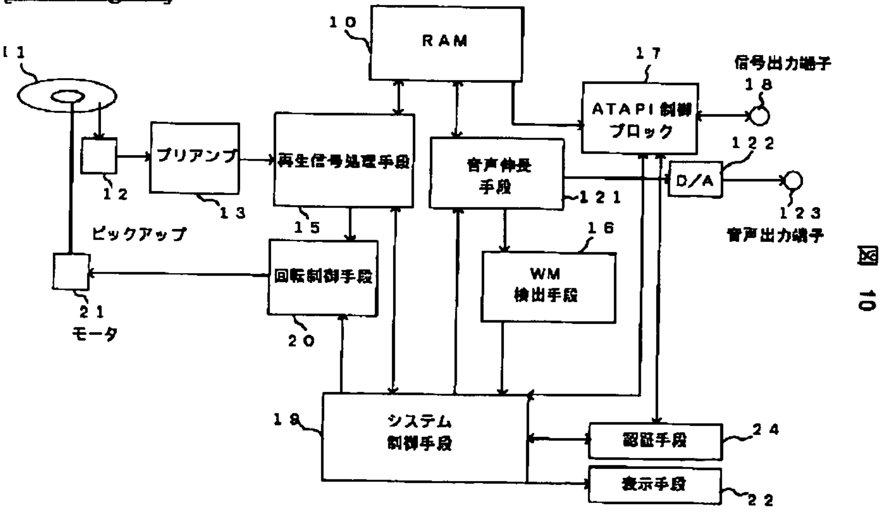

10
RAM
11
17
ATAPI 制御
ブロック
18
信号出力端子
プリアンプ
再生信号処理手段
画像伸長
手段
101
12
13
ピックアップ
15
16
WM
検出手段
回転制御手段
21
モータ
20
19
システム
制御手段
認証手段
24
表示手段
22

図 8

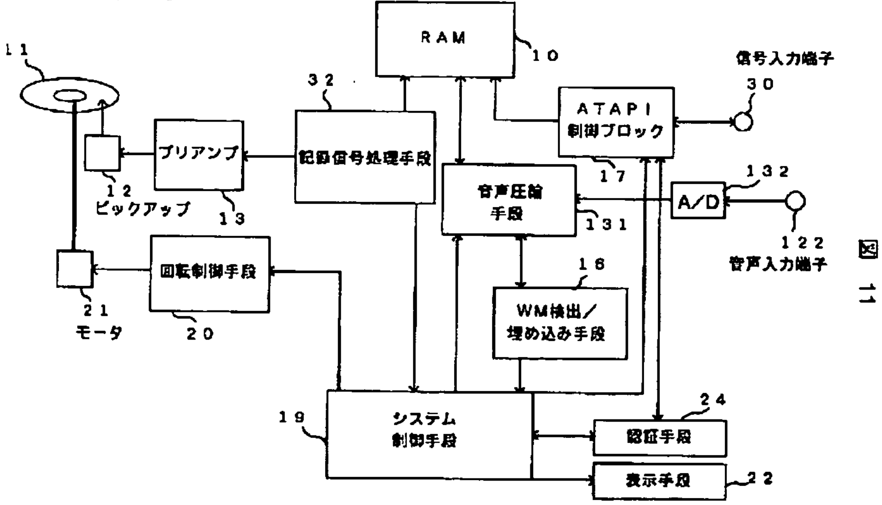
[Drawing 9]


RAM
10
17
ATAPI
制御ブロック
30
信号入力端子
32
記録信号処理手段
11
プリアンプ
12
ピックアップ
13
画像圧縮
手段
111
16
回転制御手段
WM検出／
埋め込み手段
21
モータ
20
24
19
システム
制御手段
認証手段
表示手段
22
図 9

[Drawing 10]


10
RAM
11
17
信号出力端子
18
ATAPI 制御
ブロック
122
プリアンプ
再生信号処理手段
音声伸長
手段
D/A
121
12
13
15
16
123
音声出力端子
ピックアップ
回転制御手段
WM
検出手段
21
モータ
20
19
システム
制御手段
認証手段
24
表示手段
22
図 10

[Drawing 11]


RAM
10
11
信号入力端子
30
32
ATAPI
制御ブロック
プリアンプ
記録信号処理手段
17
132
12
ピックアップ
13
音声圧縮
手段
131
A/D
122
音声入力端子
16
回転制御手段
WM検出／
埋め込み手段
21
モータ
20
24
19
システム
制御手段
認証手段
表示手段
22
図 11

[Drawing 12]

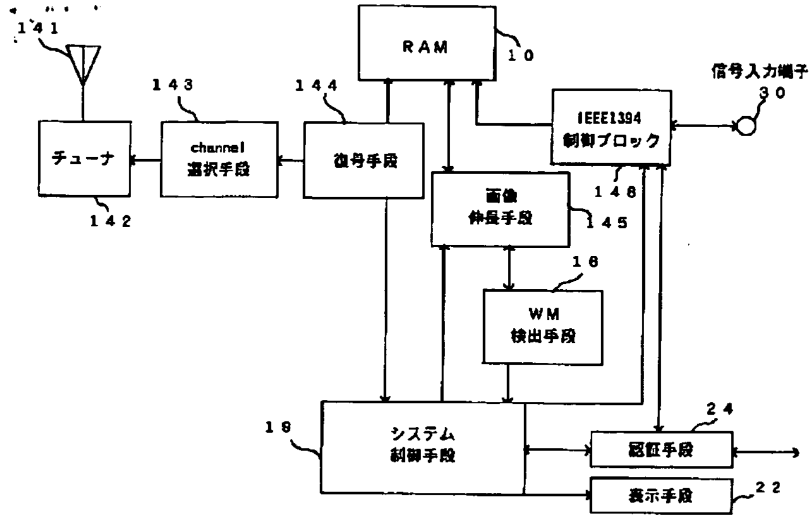

141
RAM
10
信号入力端子
30
143
144
IEEE1394
制御ブロック
チューナ
channel
選択手段
復号手段
146
画像
伸長手段
142
145
16
WM
検出手段
24
18
システム
制御手段
認証手段
表示手段
22

図 12

[Drawing 14]

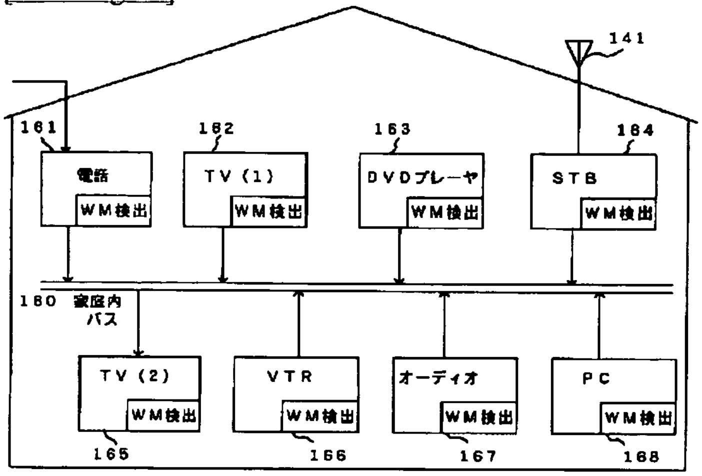

141
161
162
163
164
電話
WM検出
TV (1)
WM検出
DVDプレーヤ
WM検出
STB
WM検出
160 家庭内
バス
TV (2)
WM検出
VTR
WM検出
オーディオ
WM検出
PC
WM検出
165
166
167
168

図 14

[Drawing 13]

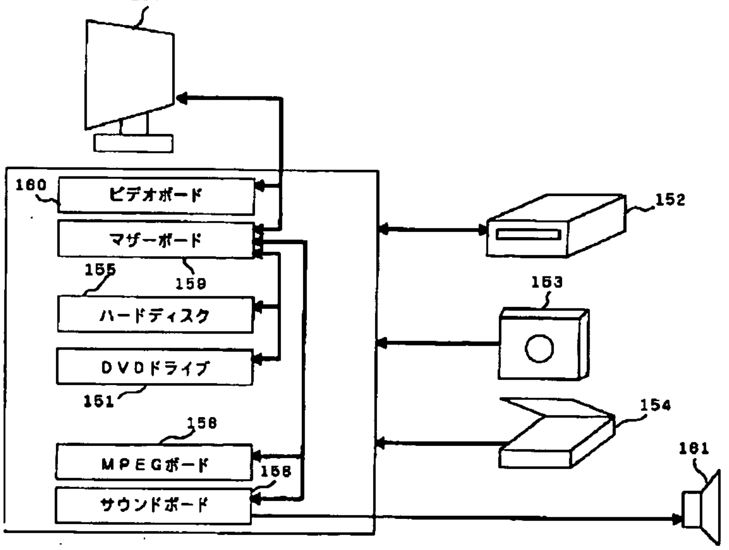

157
160
ビデオボード
152
マザーボード
155
159
153
ハードディスク
DVDドライブ
151
154
158
161
MPEGボード
156
サウンドボード

図 13

[Translation done.]